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CONUS BASE TRANSPORTATION MOVEMENT CONTROL DURING MOBILIZATION

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WILL THE CURRENT SYSTEM DO THE JOB?

BY

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CONUS BASE TRANSPORTATION MOVEMENT CONTROL DURING
MOBILIZATION - WILL THE CURRENT SYSTEM DO THE JOB?

AN INDIVIDUAL STUDY PROJECT

by

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ABSTRACT

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INTRODUCTION

From a historical perspective, the construction of a comprehensive highway network beginning in the 1950s was actually the genesis of the current movements control challenge. During World War II and the Korean War, passengers and cargo moved largely by buses and trains. The movements control system at that time was in the hands of commercial bus and rail schedulers. Since those days the United States has increased its dependence on highway movements. A greater share of resources and goods moving within CONUS now reaches manufacturers and the marketplace on trucks. In addition, we have become a nation of commuters, living in suburban communities and driving to urban work centers.

The Vietnam War, which occurred after this transformation, did not adequately demonstrate a requirement for a comprehensive movements control system. Most of the unit deployments to Vietnam took place over prolonged periods and did not place significant demands on the highway system.

Although the mobilization and deployments associated with DESERT SHIELD and DESERT STORM were far short of total mobilization, they were executed in a relatively brief period and give some insight to future requirements for movements control. As the US military becomes a CONUS based, contingency force, the need to deploy rapidly and efficiently to a theater of operations will become increasingly important. Movements control will play a significant role in satisfying this requirement.

The United States Army Forces Command (FORSCOM) has the mission to "Mobilize and deploy trained, mission capable US Army forces, as directed, to other unified and specified commands."¹ Inherent within this mission is the responsibility to control the movements of mobilizing and deploying units. In executing this responsibility, FORSCOM has established a system and published a regulation. The system is the FORSCOM Mobilization and Deployment Planning System (FORMDEPS). The regulation is FORSCOM Regulation 55-1, Unit Movement Planning.

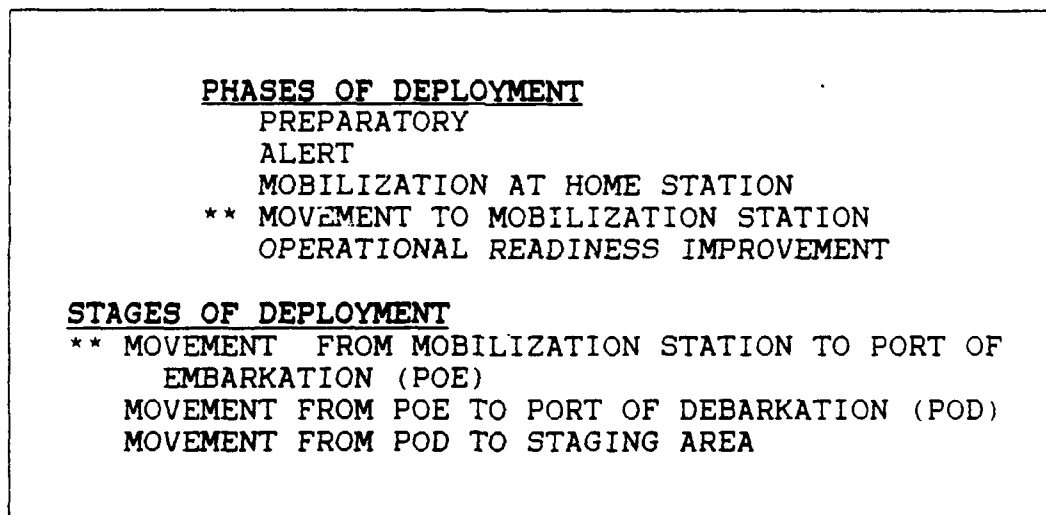


Figure 1 - Mobilization and Deployment Process

The components of the mobilization and deployment process are outlined in Figure 1.² Asterisks mark the elements that require FORSCOM to exercise movements control authority over units. Figure 2 on the following page is a pictorial representation of the general case of unit movements during mobilization and deployment.³

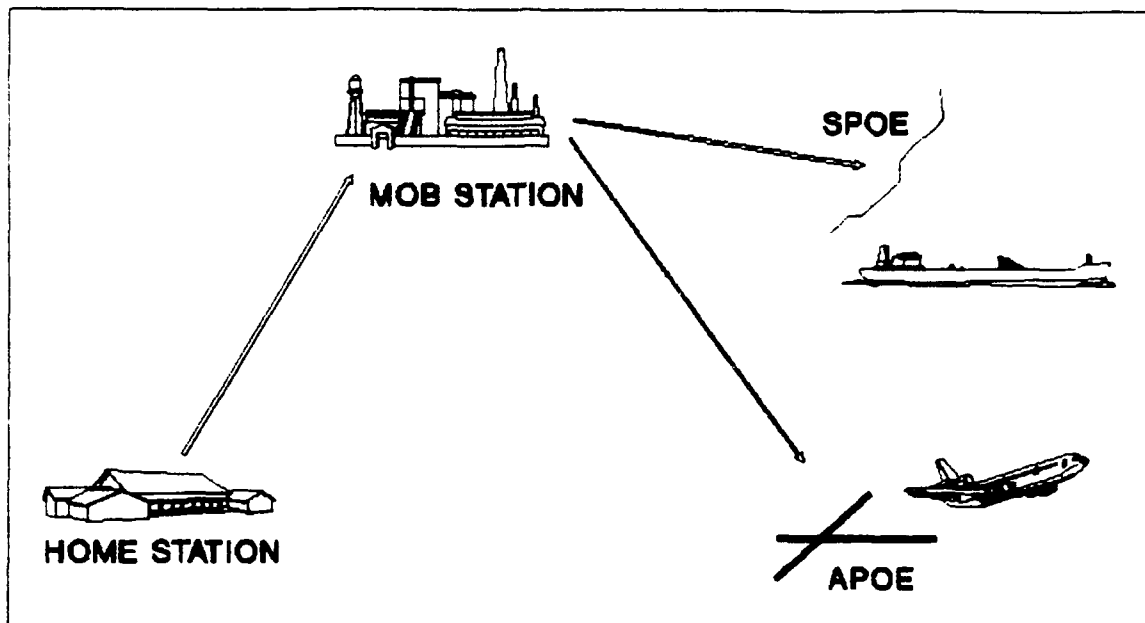


Figure 2 - Unit Movements

The United States has a vast network of improved roads. State Departments of Transportation maintain the nearly 250,000 miles of highways that comprise the Defense Highway System. A subset of that system is the Strategic Highway Net (STRAHNET), including the entire interstate system (43,500 miles) and other critical, improved roads (16,500 miles). The STRAHNET and 7,000 miles of connecting roads to ports and installations define "the minimum interconnected highway network required for defense."⁴

During the mobilization and deployment of forces, military equipment will compete with commercial and private traffic for access to this network. The orderly and efficient use of this strategic asset demands an effective control system.

The purpose of this paper is to accomplish the following:

- a. Describe the current organization and procedures for movements control within the continental United States (CONUS).

- b. Evaluate their use during peacetime and partial mobilization.
- c. Comment on their adequacy for full mobilization.
- d. Review current initiatives for movements control.
- e. Recommend policy and procedural changes.

ORGANIZATION FOR MOVEMENT CONTROL

FORSCOM Regulation 55-1, Unit Movement Planning, establishes a hierarchy of organizations and individuals with movements control responsibilities. A summary of the more important activities and their key responsibilities are provided below.

The five Continental United States Army (CONUSA) headquarters publish convoy support directories for their respective areas. They also publish and maintain an Emergency Highway Traffic Regulation plan for implementation upon direction of FORSCOM. Finally, they must ensure that State Area Commands (STARCs), Major U.S. Army Reserve Commands (MUSARCs) and installations are trained on convoy procedures and movement control.⁵

MUSARC headquarters must set up procedures for approving and monitoring subordinate unit movement plans at least once every two years. They are required to appoint a Unit Movements Coordinator to execute assigned movements control responsibilities.⁶

In each STARC the Adjutant General will appoint a Defense Movement Coordinator. He will also establish procedures for approving, reviewing, and maintaining unit movement plans.

Lastly, he is responsible for Unit Movement Officer training and for input to the CONUSA Convoy Support Directory.⁷

Some of the most important individuals in the movements control system are the STARC Defense Movements Coordinators (DMC). Upon mobilization, each DMC will operate a State Movement Control Center (SMCC) to monitor Army National Guard, U.S. Army Reserve and Active Component convoys. It is the DMC and his SMCC that will approve mobilization and deployment convoy movements from home station to mobilization station and to the ports of aerial and surface embarkation (APOE and SPOE).⁸

Each U.S. Army installation has a Unit Movement Coordinator (UMC). Working for the Installation Transportation Officer, the UMC reviews and maintains unit movement plans for all organizations mobilizing or stationed at that installation. The UMC also maintains the means to electronically transmit convoy clearance requests from units to the State Movement Control Center.⁹

Every U.S. Army company and detachment, Active or Reserve Component, is required to have a Unit Movement Officer or Noncommissioned Officer (UMO/UMNCO). These individuals prepare and maintain unit movement plans, load plans, and convoy clearance requests. They are also responsible for publishing unit movement standing operating procedures (SOP) and training unit load teams. Finally, they must ensure that the unit has personnel trained to certify hazardous materials for movement.¹⁰

In addition to the US Army structure for movements control each state has a Department of Transportation (DOT). State DOTs

are responsible for managing all highways within the state border. Each state DOT establishes its own criteria for convoys and other movements requiring permits. They do not relinquish this responsibility to military authorities when mobilization is declared.¹¹

PROCEDURES

All of the following configurations are defined as a convoy by FORSCOM:

- a. Six or more vehicles moving as a group under a single commander.
- b. Ten or more vehicles per hour dispatched over the same route to the same destination.
- c. Any movement of one or more vehicles which require a special hauling permit because of size or weight.¹²

According to one source: "Convoy operations in peacetime are generally not a big problem. But during mobilization the competition for road space and support will be massive."¹³ The great highway system described earlier in this text may seem to meet any requirement for movement. However, congestion can occur around military installations, aerial ports, surface ports, major highway interchanges, and urban areas. Large numbers of slow moving military vehicles, if not properly controlled, can create tremendous traffic flow problems.

Obviously, during mobilization military convoys will be given preference when allocating road space. Yet, industrial mobilization and private sector requirements will also be highway

dependent. An efficient and effective system must be in place to avoid wasted time, wasted fuel, and gridlock.

The convoy clearance procedure now in effect is largely a manual system. The unit wishing to move has been given a deconflicted window for arriving at its mobilization station. Based on the window, the Unit Movement Officer submits a convoy request that proposes starting and closing times, rest halts, and rates of travel.

The request is passed through the servicing Installation Transportation Officer or United States Property and Fiscal Office (ARNG units only) to the State Movements Control Center. Here the real work begins.

Under the direction of the Defense Movements Coordinator, the SMCC must communicate with the destination installation and supporting bases along the proposed convoy route. They must also consult with the State Department of Transportation for information on construction and other highway limitations. If the convoy crosses state lines, the SMCC will coordinate with the SMCCs in the Joint State Area Commands of the affected states. They will in effect negotiate a convoy clearance that is acceptable to all parties, compromising as necessary to get the unit to its destination. This coordination and approval process is represented in Figure 3 on the following page.¹⁴

Once the unit receives approval of its request, as amended during the coordination process, a road movement order is published, strip maps are prepared, and the convoy is executed. The entire process is repeated when the unit moves from the

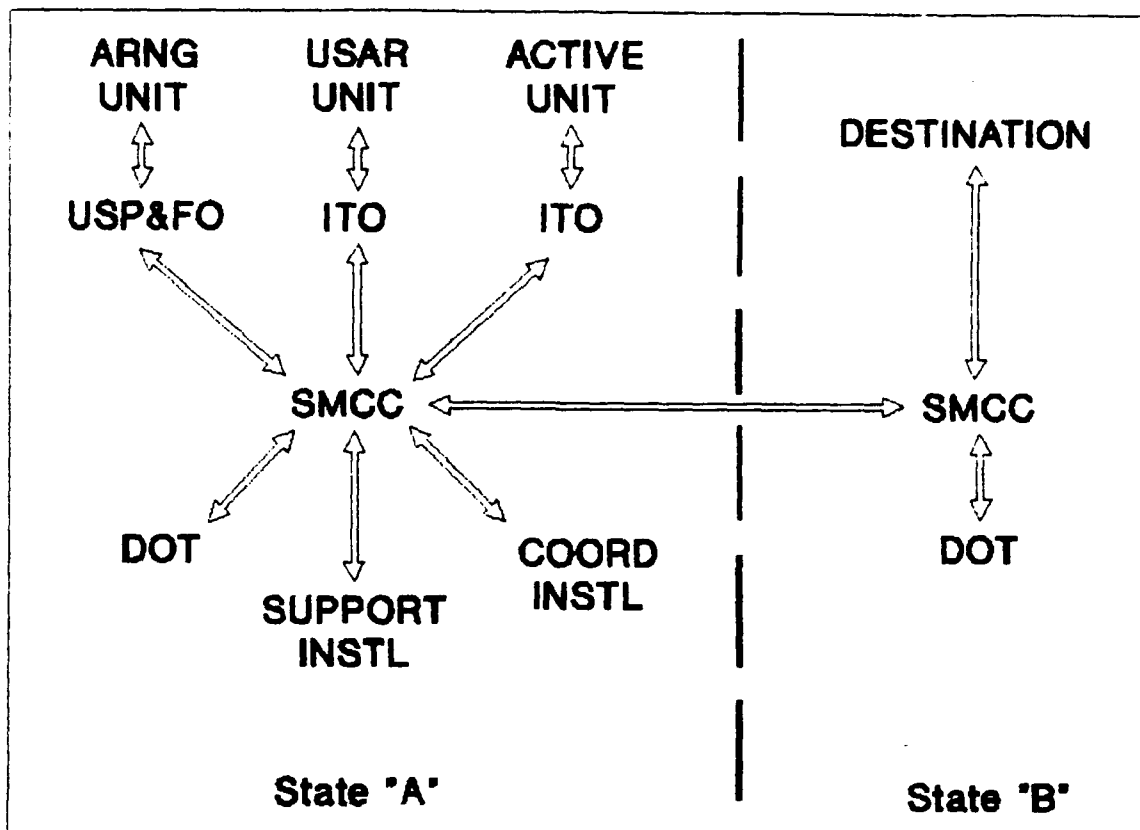


Figure 3: Convoy Approval Process

mobilization station to the port of embarkation.

Several years ago, FORSCOM began to develop an automated system to replace the manual process described above. The need for automation was summarized in a draft problem specification written at Oak Ridge National Laboratory in 1986.

"Lack of an integrated, automated convoy scheduling system and data base upon which to schedule convoys and resolve scheduling conflicts can result in inefficiency of peacetime planning and serious problems during mobilization. Also, when traffic congestion, accidents, or sabotage on the transportation network force the use of alternate routes, convoy commanders must do so with very limited visibility of the status of the transportation network or the movement of other convoys on that network."¹⁵

The joint efforts of FORSCOM and Oak Ridge National Laboratory produced an automated system that has since been

labeled Mobilization Movement Control (MOBCON). The heart of the system is a mainframe computer located at Headquarters, FORSCOM, Fort McPherson, Georgia. In its data base are details describing over 330,000 miles of highways linking approximately 10,000 unit origins with dozens of mobilization stations and ports.¹⁶

The central computer is accessed over standard commercial telephone lines from personal computers operated by DMCs in peacetime and SMCCs after mobilization. Convoy movement requests are received at the mainframe and deconflicted based on priorities established by the supported CINC or, if more than one theater is involved, the Chairman of the Joint Chiefs of Staff. The results of the process are available to FORSCOM, the CONUSAs (which become Joint Regional Defense Commands upon mobilization), and every state DMC. The DMCs are responsible for keeping their state's highway information current in the FORSCOM data base. As of February, 1991, twenty-three states are tied into the MOBCON network. A FORSCOM staff officer estimated that the remaining states would participate by the close of fiscal year 1991.¹⁷

Headquarters, US Army Military Traffic Management Command (MTMC) is also fielding an Army-wide unit mobilization and deployment package called the Transportation Coordinator Automated Command and Control Information System (TCACCIS). When fully implemented, it will give deploying units powerful aids for executing organic and commercial movements. The importance of TCACCIS to highway movements during mobilization and deployment is its ability to automate the convoy clearance request process. For unit or sub-unit (within the same unit identification code)

moves the Highway Module of TCACCIS will not only generate a DD Form 1265 (Request for Convoy Clearance), but also a DD Form 1266 (Request for Special Hauling Permit) for outsize or overweight vehicles.

Company and detachment personnel and equipment data bases are maintained by TCACCIS on a mini computer positioned in the office of the Unit Movement Coordinator at the installation where the unit is stationed or mobilizes. Active Component UMOs update their unit's data base by using personal computers at the ITO or over a modem from personal computers at their battalion headquarters. Reserve Component units have access to the ITO computers once they arrive at the mobilization station. Data collected and maintained at the installation level is currently placed on magnetic tapes and forwarded monthly to FORSCOM, providing unit input to the Computerized Movement Planning and Status System (COMPASS). When FORSCOM is eventually tied into the Defense Data Network, unit data base changes will be passed over modems and telephone lines as they are posted by Unit Movement Officers.

The future of automation for movements control is represented by the Reserve Component Automation System (RCAS). RCAS will standardize, consolidate, and expand the capabilities of a number of stand alone systems, including MOBCON and TCACCIS.

According to requirements documents, RCAS will provide solutions to many existing movements control problems. For example, it will allow greater control of convoys. Convoy commanders who find themselves behind schedule or facing a

blocked route will use commercial telephone lines or convoy support radio networks to call the nearest State Movements Control Center. The SMCC can query the central computer and inform the convoy commander to continue, redirect to an alternate route, or hold in place for a new movement window.

For the first time RCAS will create a fully integrated, automated system, top loaded with the CINCs requirements and bottom loaded with unit data. It will be built to generate everything from movement status reports to the CINC to strip maps for the convoy commander.¹⁸ The Program Manager for RCAS, working for the National Guard Bureau, has the responsibility for fielding this vital system. Limited fielding is currently scheduled for fiscal years 1993 and 1994, with full development extending into fiscal years 1995 and 1996. The contract for the system will be let in October 1991.¹⁹

EVALUATION

An evaluation of movements control from the military perspective must address strategic and working level concerns. It is also useful to divide the evaluation into parts that differentiate between manual and automated systems.

At the strategic level, a manual movements control system is virtually useless. The supported CINC cannot influence the action. The decentralized manual system cannot be coordinated to ensure that movements will be executed in accordance with the CINC's priorities for units. Convoy requests are essentially processed on a first come, first served basis.

With a manual system, FORSCOM has very limited visibility and influence over convoy schedules. Additionally, once convoys are in motion, FORSCOM has difficulty making route diversions or schedule adjustments to adapt to changing priorities for units. The Military Airlift Command (MAC) and MTMC, who schedule strategic lift, also have no view of units moving to their ports.

Finally, all of the systems and procedures described above are only applicable to the US Army. US Navy, Air Force, and Marine Corps units, Active and Reserve Components, will also be on the move during mobilization. State Departments of Transportation can approve their convoys and deconflict them with those of the U.S. Army. However, there is no agency to coordinate the efforts of the state DOTs or provide them with joint priorities for movement.

At the working level, a manual movements control system is neither responsive nor efficient. Even after extensive telephonic coordination, convoys can be approved that conflict with one another.

Because of breakdowns, delays, and poor road march discipline, units often reach critical points and destinations behind schedule. Without a means to make adjustments, the potential for creating traffic congestion is greatly increased.

The DD Form 1265 (Request for Convoy Clearance) can be an intimidating form for untrained individuals. Although emergency moves can be accommodated, routine requests must be submitted 60 days in advance to allow coordination to take place. This lead

time is especially critical if the convoy is to cross state boundaries.

Because of limited temporary duty funding, unit personnel turnover, and the small number of quotas available for formal schools, many units do not have trained Unit Movement Officers or Noncommissioned Officers.

Two schools currently offer formal classes for Unit Movement Officers and Noncommissioned Officers: The Joint Strategic Deployment Training Center, Fort Eustis, Virginia, and the U.S. Army Reserve Readiness Training Center at Fort McCoy, Wisconsin. In Fiscal Year 1991, the JSDTC Surface Deployment Course will have 225 quotas available.²⁰ During the same period, the ARRTC Unit Movement Officer Course will have seats for 360 students.²¹

Since most Reserve Component units conduct convoy training only in conjunction with their annual training period, convoy planning and discipline have become perishable skills. The lack of convoy training was apparent during the recent mobilization and deployment for Operation DESERT SHIELD in Saudi Arabia. One state's DMC noted that several convoy requests were submitted in deplorable condition. They "have shown up with only the start point, release point, state lines, and maybe the location of the over-night [sic] rest halt." His comments were based on thirteen convoys originating in his state and moving to various mobilization stations.²²

Because DESERT SHIELD was not a total mobilization, all mobilization stations were not activated or used. Units scheduled to mobilize at one location found themselves directed

to altogether different posts. Any mobilization convoy clearance requests and service support plans prepared in advance, if they existed, had to be changed.

Active U.S. Army units had their share of problems as well. "Active component convoys moving to east coast ports of embarkation have been encountering difficulties during peak traffic periods and in urban areas. A number of convoys have been halted by civil authorities for using routes that had not been approved with [sic] the State Department of Transportation."²³

Automated movements control systems currently being fielded will add significant capabilities to existing manual procedures. However, they have not been used enough to allow much evaluation. They were not in place in adequate numbers or with sufficient lead time to be extremely helpful for the DESERT SHIELD deployment. It was noted earlier that MOBCON has been installed at twenty-three state DMC offices. However, in August, 1990, only 12 states possessed this system.²⁴

TCACCIS has been fielded in CONUS to all twenty-four Active Component troop installations, but only to one Reserve Component operated mobilization site.²⁵ Therefore, it cannot be used by all deployable units at this time. Exacerbating the situation is the Congressionally imposed moratorium that prevents Reserve Component units from buying more automation hardware until the Reserve Component Automation System is on line. As a result, TCACCIS may have been available to some Reserve Component units

once they reached their mobilization stations; but, it was generally not available at their home stations.

Ironically, the use of TCACCIS was also limited for Active Component units. Some of these units had not yet entered their data into the system. In addition, although the TCACCIS data base is unit oriented, some active U.S. Army major units found it more practical to dispatch convoys by type of vehicle without regard to unit integrity. The 101st Airborne Division (Air Assault), for example, dispatched several convoys of HMMWVs from Fort Campbell, Kentucky, to the port of Jacksonville, Florida.²⁶

RCAS promises improvements, but will not solve all problems. It will be more flexible and comprehensive than current automated systems. However, it must be supplemented by satellite communications and global positioning systems to provide real time information and responsiveness for convoy operations.

Apart from the shortcomings related to manual and automated systems, there is another concern. The concept of having a full time DMC is relatively new. Although Defense Movement Coordinators are required in each of the contiguous forty-eight states and the District of Columbia, the National Guard Bureau has been able to resource only thirty-nine. Five states in both the 5th and 6th Army areas have not been provided manpower authorizations for DMCs. However, these ten states contain only a small portion of the total defense road network and are lightly populated with military units and installations. Until DMC positions are filled, STARC Command Logistics Staff Officers or

Traffic Managers from the state's USP&FO will perform MOBCON functions.²⁷

Finally, an evaluation of centralized mobilization and deployment movement control systems must consider the real and perceived concerns of the individual states. Will state governments resent a centrally operated movements control system? Does such a system infringe on the right of each state to control the highways within its boundaries? Are there advantages for the states that outweigh inconveniences or infringements?

The somewhat surprising answer to these questions is that, in general, the states welcome the concept of centralized movements control. For the first time, their State DOTs will be able to deal with one organization for all military movements. Their point of contact, the SMCC, can interpret military terms, provide details about military equipment, and insert state limitations into the central computer. In addition, the centralized system continues to allow the states to approve moves requiring permits for hazardous cargo, weight, or size.²⁸

Also for the first time, the states will have complete visibility over every military convoy, regardless of origin or destination, that crosses their borders. In the past, manual coordination failures or disregard for established procedures created ill feelings when convoys appeared on a state's highways, apparently without permission. Automated systems, under centralized direction, help eliminate uncontrolled or unscheduled moves.

Lastly, individuals in state governments have a strong sense of cooperation and support for national efforts, especially when they are kept informed. During the deployments for DESERT SHIELD and DESERT STORM, for example, many states waved commercial trucks bearing military loads past their roadside scales. They also provided law enforcement officers for traffic control and convoy assistance.²⁹

CONCLUSIONS AND RECOMMENDATIONS

In spite of the best efforts of many dedicated individuals and organizations, the largely manual highway movement control system in effect today would be overwhelmed in the event of a rapid, total mobilization. Recent difficulties experienced during the partial mobilization and deployment to support Operations DESERT SHIELD and DESERT STORM would be replicated and perhaps multiplied during major unit moves. Real time control of highway movements continues to be an elusive goal.

Several steps must be taken to improve this situation. First, the US Army's Forces Command should be appointed as the executive agent for joint movements control within the continental United States. If the nation's highway network and ports are to be used efficiently to support the theater CINC, then centrally controlling these assets is essential. The state DMCs and SMCCs, operating within the Joint State Area Command and working for FORSCOM after mobilization, give the US Army the means to carry out this joint mission. Since the unified CINC or the Chairman of the Joint Chiefs of Staff establishes movement

priorities, concern over the potential for service parochialism or favoritism should not exist.

Second, the ongoing efforts to automate the movements control system must continue. TCACCIS and MOBCON represent an increase in capability for a low investment in resources. They also provide a foundation for the greater capabilities of RCAS. Even after RCAS is fielded, TCACCIS remains as the vehicle for Active Component unit and installation access to RCAS.

With its reliance on unit supplied data; ability to support military and commercial moves by air, highway, ship, and rail modes; and use of personal computers, TCACCIS will become part of the solution to the mobilization and deployment challenge. However, its usefulness will be limited until fielding at all mobilization sites is completed; unit personnel are trained in its use; and unit data bases are entered.

MOBCON, an interim system for the movement control module of RCAS, also promises to be a helpful initiative. The efforts of the National Guard Bureau to extend MOBCON capability to the remaining CONUS states and the District of Columbia should be expedited. With this automated system, the CINC, FORSCOM and other headquarters with movements control responsibilities can see and influence mobilization and deployment moves. When supplemented by effective coordination among law enforcement agencies, state Departments of Transportation, and movements control agencies, the use of MOBCON will create efficiencies in movements management.

Even if MOBCON and TCACCIS are successful, the development and fielding of the Reserve Component Automation System must be accomplished on schedule. It represents increased capability, flexibility, and responsiveness over current automated systems. Moreover, until RCAS is fielded, attempts to pursue any other automation initiatives within the Reserve Component community are virtually at a stand still.

The Department of Defense community must acquire the hardware required to provide real time control of convoy movements. The success of global positioning systems and portable satellite communications equipment during DESERT SHIELD/DESERT STORM will provide the impetus to buy more of these devices. The US Army Deputy Chief of Staff for Logistics must ensure that Transportation movements control requirements are identified and included when these systems are purchased.

Lastly, although sophisticated computer systems and joint procedures will improve movements control operations, trained people are required to make these programs successful. Unit Movements Officers and Noncommissioned Officers must be educated through a combination of formal and informal schooling.

The number of quotas available at the Joint Strategic Deployment Training Center and the Army Reserve Readiness Training Center must be increased. In addition, Unit Movement Coordinators at installation, Major US Army Command; state DMCs; and US Army Readiness Groups must expand their efforts to provide informal instruction through mobile training teams and visits to individual units according to potential priorities for

deployment. With 10,000 deployable units of company and detachment size within FORSCOM, the training task is huge.

Units must also do their part. Commanders should carefully select Unit Movement Officers and Noncommissioned Officers. All personnel chosen for these key positions should have at least one year of retainability. Convoy training should be included in the commander's mission essential task list and incorporated into weekend drill training (Reserve Component) and tactical training schedules (Active Component) for all units with a requirement to convoy equipment to mobilization sites and ports.

The US Department of Defense is approaching some lean budget years. At the same time the requirement to fully mobilize forces to meet a major threat is seen as less likely. In this environment it will be difficult to generate funds to address the problems reviewed in this paper.

However, if this nation's armed forces, regardless of branch or component, are to maintain the capability to mobilize and deploy rapidly, movements control planning, procedures, and systems cannot be ignored. DESERT SHIELD/DESERT STORM validated a requirement for increased strategic lift. Movements control must be recognized as the equally important tool that allows US forces to reach the ports of embarkation for that strategic lift. From CONUS origin to theater destination, the mobilization and deployment process is only as strong as its weakest link.

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